EXF Thinning, Fuels Reduction and Research Project
Appeal Issues and Responses
Deschutes National Forest
June 2010

Appellants	**Appeal Number**
Oregon Chapter Sierra Club, League of Wilderness Defenders, and Blue Mountain Biodiversity Project, and Cascadia Wildlands (OSC)	10-06-00-18-215
Oregon Wild (OW)	10-06-00-19-215

Appeal Statements

Purpose and Need:

Appellants Statement #1: Appellants state that the purpose and need is flawed, unacceptably narrow, and the decision will not meet the purpose and need, because the purpose and need for this project are not clear and compelling. Appellants assert that the letters of support for this project from scientists highlight the need to protect existing research sites which can be accomplished with more targeted treatments and that the purported need for research opportunities can be met in more ecologically appropriate places. OW at 2; OSC at 2, 24, 29, 32, 34, 35, and 63.

Response: I find that the FEIS meets the requirement of 40 CFR 1502.13 and that it specifies "the underlying purpose and need" of the project (FEIS pages 3- 5, and Appendix C).

The CEQ regulations 40 CFR§1502.13 require that the purpose and need "statement shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." The purpose and need for the project is based on existing and desired conditions (FEIS page 4, and Appendix C), and the objectives of LRMP Management Area 16, Experimental Forest (pages 2 and 3, and Appendix C). The definition of experimental forests given on page 3 based on the 1930 Regulation L-20 is an area: "dedicated to and used for research, and to make them permanently available."

The FEIS Appendix B page 19 states that "Nothing in this study plan precludes future, higher priority research from occurring within the Lookout Mountain Unit of Pringle Falls Experimental Forest." In addition, while the selected alternative and study plan may preclude some types of research, it will provide a platform on which other types of research are still possible.

Appellants Statement #2: Appellants state that the purpose of preventing "catastrophic" events related to beetles and fire are unscientific, and that scientists should know that beetles and fire are natural parts of dynamic forests. Appellants assert that these natural disturbances are not catastrophes, but are events that cause mortality, cycle nutrients, renew vegetation, change habitat from one type to another, etc., and that research designed to suppress natural processes are unneeded. Appellants assert that research should help learn how to live with these natural processes and use them to our advantage. Appellants suggest that the FS should do a research project that creates an artificial mortality event that builds a moderate beetle population that then thins the forest naturally without roads and heavy equipment and the adverse effects of captured mortality. OW at 3 and 5.

Response: I find that the determination of "imminent risk to catastrophic loss of overstory to bark beetles" was made prior to the EXF decision by the Station Director signing the Study Plan on March 3, 2009. I find that the appellants assertions that the purpose of the proposal is to suppress natural disturbance is not as stated in the FEIS; instead, the purpose and need is to reduce the risk of severe insect epidemic or catastrophic fire, not to prevent natural disturbance from occurring.

For the Study Plan and proposed actions to be consistent with Management Area 16 standards and guidelines (Experimental Forest), the Director of PNW Research Station must determine the project area is at "imminent risk to catastrophic loss of overstory to bark beetles" (FEIS Appendix C page 1). This determination was based on the "definition in stocking levels for the Deschutes National Forest based on the Stand Density Index, and refers to loss of the overstory to bark beetles" (FEIS Appendix C page 1, and FEIS page 4). The Study Plan (FEIS Appendix B pages 4-7) describes the existing conditions in terms of SDI and growth rates. This is the basis on which the Station Director made the "imminent risk to catastrophic loss of overstory to bark beetles" determination (FEIS Appendix C page 1). The determination was made by the Station Director's signature of the Study Plan.

Fire and Fuels:

Appellants Statement #3: Appellants state that thinning will remove canopy that currently helps suppress the growth of ladder fuels, thus making the stands hotter, dryer and windier and more vulnerable in the event of wildfire due to growth in surface and ladder fuels. OW at 3.

Response: I find that the proposed treatments of Alternative 2 lower the potential for a surface fire to become a passive or active crown fire (FEIS at 116-117, Measure 2) by reducing ladder fuels. The FEIS at 107 documents that increasing the height to live crown ratio by thinning results in less torching. The FEIS also documents that there is a concern that opening up the understory may allow surface winds to increase, potentially increasing fire behavior of surface fires (FEIS at 116).

Appellants Statement #4: Appellants state that the FEIS's analysis of the no action alternative is misleading because (1) it assumes the occurrence of an unlikely event (extreme fire) that removes habitat, even though such an event is much less likely than logging which is much more certain to degrade habitat, and (2) the FEIS assumes that late successional species that prefer forest features such as dense forests and high amounts of dead wood are more threatened by fire than by logging (e.g. FEIS pp 135, 159, 166, 168, 170, 175, 184). OW at 10.

Response: I find that the FEIS does not assume that late successional species are more threatened by fire than by logging, but instead discloses the consequences of no action and the consequences of thinning and fuels treatment.

For example, on page 159 as cited by the appellants, the no action disclosure for marten states that a wildfire would have the potential to have serious effects to marten habitat through canopy removal that would reduce that type of habitat for decades, and that there would be an initial pulse of large logs and snags for denning and prey habitat, thus documenting the benefit for marten that might occur.

Appellants Statement #5: Appellants state that since the location, timing, and severity of wildfire cannot be predicted, fuel reduction logging would occur on many acres that will not burn during the period before fuels regrow in treated areas. Thus many "extra" acres of habitat will be

treated unnecessarily, degrading far more habitat than would benefit from fuel treatments. Appellants also state that the NEPA analyses failed to carefully account for the real probability of fire encountering a small-scale fuel break, as well as the full environmental impacts and expense of a large-scale network of fuel breaks. OW at 11 and 12.

Response: I find that the FEIS discloses assumptions to address this point on page 111. "Assumption: For the analysis in this document, the effects of treatments are assumed to cover 100% of the treatment area. There is currently no way to spatially analyze untreated areas within treatment units (e.g. some small existing research plots will not be treated). Leaving certain areas of units untreated would likely reduce the effectiveness of hazard fuel reduction indicated in the analysis, but to what extent is unknown. " Also, the FEIS at 11 states "Assumption: There are 12 plots of ½ acre each that fall within the EXF planning area where fuels will remain untreated following density reduction. For the purpose of analysis, these small plots have been considered as a part of treated acreage. It is assumed that these plots will be surrounded in treated areas that will produce desired, safely manageable fire behavior in the event of an unplanned ignition and allow for protecting the plots from unplanned ignitions occurring outside of the plots. Treatments will not protect from unplanned ignitions occurring inside the plots." In addition, the FEIS discloses the effects of a fire encountering a small-scale fuel break in the fire and fuels section of the FEIS (p 100-124).

Appellants Statement #6: Appellants state that the FEIS failed to disclose the weaknesses in the fire-regime condition-class (FRCC) methodology. OW at 13.

Response: I find that the Fire and Fuels report page 32 discloses that FRCC is a coarse scale analysis. The EXF project includes the use of fire across all treatment units as part of the study design and fuels reduction. Although fire regime/condition class are described for the vegetation type in the project area, actual fire behavior simulations are based on site-specific information gathered in the field and from satellite data (FEIS at 101-102).

The Morrison and Smith 2005 paper is cited within the FEIS to support the explanation of why Fire Regime Condition Class information is used to display a reference condition, but is not used in measuring the effects of the alternatives and therefore not used in the decision making.

Appellants Statement #7: Appellants assert that the FS should not have assumed extreme 97% weather conditions just to highlight differences between alternatives, and instead should describe the effects of less extreme fire weather conditions. The NEPA analysis focused too much on the amount and structure of fuels instead of the climate, ignition, probabilities, and other critical factors that determine whether fuel treatments will be effective. OW at 14 and 15.

Response: I find that the FEIS used appropriate weather conditions to analyze fire behavior and describe alternatives. 97th percentile weather conditions are commonly used by fire analysts to account for the potential for large fire growth. These weather conditions take into account climate influences on fire behavior including temperature, relative humidity and wind speed. FEIS at 111. I find that the FEIS does disclose that lightning will remain a source of potential ignitions. FEIS at 110. The three factors that primarily influence fire behavior are fuels, weather and topography. FEIS at 109. Of those, managers have the ability to influence fuels; the importance of changing the amount and structure of fuels is described at the appropriate scope and scale in the FEIS.

Appellants Statement #8: Appellants assert that the FEIS did not disclose acres of maintenance underburning "every X years" post project that would be needed; did not disclose the total burn

piles across the project; did not disclose the extent of rehabilitation actions for fireline; did not disclose the percent of the areas acres to be burned per year or per consecutive year; and did not disclose the impacts from biomass. OSC at 4 and 5.

Response: I find that the FEIS does address follow up treatments. I find that the Fire and Fuels Report (page 4) discloses that district experience and field reviews have shown that vegetation management activities such as thinning followed by mowing and prescribed fire have the beneficial effect of reducing fire intensity and fire behavior for an average of 15 years, perhaps longer depending on location and treatment intensity.

The Fire and Fuels Report (page 15) also states that when prescribed fire is used every 8 to 15 years, depending on fuel accumulations, these areas should regenerate ponderosa pine slowly through time as they did historically (Agee, 1993).

I find that the FEIS did disclose the potential effects associated with treatment of slash and with biomass. FEIS at 118-120 and 213. If biomass cannot be utilized, the lighter concentrations will be lopped and scattered and heavier concentrations grapple piled and burned. Assuming no market for smaller, material, approximately 50 percent of the unit acres will have heavier concentrations of small material grapple piled and burned. This assumption was used in the analysis (FEIS pages 20-21). The FEIS did disclose that based on personal communications with timber sale administrators, the Forest average for log landings is one landing (100 feet by 100 feet) for 10 acres of harvest (approximately 2 percent of the unit area). FEIS at 212. Additionally, until the thinning has occurred, it is not typically possible to estimate the exact number of piles that would be created, which is influenced by breakage, bucking, limbing, and other factors.

I find that the ROD at 5 discloses the actions that will rehabilitate firelines. Displaced topsoil and unburned woody debris would be redistributed over the firelines following prescribed burning activities. ROD at 5.

Appellants Statement #9: Appellants state that the EIS claims of fire exclusion is a relatively recent phenomenon and that the EIS fails to objectively disclose and address the scientific research and site-specific fire evidence pertaining to this issue and to the evidence that fire return intervals are far greater than claimed in the FEIS. OSC at 6, 13, 42 and 69.

Response: I find that the FEIS discloses that the project area is primarily made up of ponderosa pine plant associations that generally fall within Fire Regime I where low-severity fires occur most frequently (FEIS pages 101-104). Mixed severity fires also occur on occasion and large stand-replacing events are rare but do happen (as evidenced by the stand-replacing fire that initiated the current stand structure at Lookout Mountain (FEIS pages 103-104). The FEIS cites Bork (1984) for fire frequency information specific to the Lookout Mountain area, which is about 7 to 38 years. The project area also falls within plant associations that (without human influence or intervention) were established and maintained with fire return interval of about 35-100 years and where stand-replacing fires also occurred.

Appellants Statement #10: Appellants state that that the Forest is required to "discuss this very lively scientific controversy about the role of mechanical fuels treatment in moving forests towards HRV and reducing the risk of fire in the project FEIS" and that the forest has not based its analysis and decision to alter the natural fire regime of the mixed-conifer forests on the best available science. OSC at 41, 42, 46, 92 and 94.

Response: I find that the FEIS discloses that thinned stands may have increases in surface winds relative to more closed stands and take longer to reach low fuel moistures than open sites (FEIS at 114). However, during summer months, fuel moistures in closed stands reach equilibrium with open sites relatively quickly and crown driven wildfire are much easier initiated in closed stands. Small tree thinning, brush mowing, and underburning will reduce surface and ladder fuels enough to substantially change fire behavior.

The scientific references provided by the commenter have been reviewed by the interdisciplinary team and also do not support the comments that the effects are scientifically controversial (FEIS Appendix F). The concerns expressed about increasing fire risk through commercial logging have been readily acknowledged and thoroughly addressed in the FEIS (pages 113-116), in part because thinning is followed by slash treatment, mowing, and prescribed fire; in part because thinning starts with the smallest trees first; and finally because thinning is not proposed solely to reduce fire risk, but as stated throughout the FEIS, thinning will reduce stand density in stands that are not sustainable at the current density.

Appellants Statement #11: Appellants state that the EIS does not adequately address science that shows how slash piles from logging create a greater risk of fire (as what occurred in the Davis Fire), fails to address the fire risk from accumulations of slash from previous projects across the area, fails to address the impacts of burning large slash piles, and fails to address how slash can increase fire risk, particularly from human actions and use of mechanized equipment during logging. OSC at 42, 43, 66, 67, 68 and 71.

Response: I find that the FEIS adequately addresses the impacts from slash treatments and the fire risk that slash creates.

The FEIS discloses that because of whole tree yarding, there will be little activity fuel (slash) (FEIS pages 20-21, 115-116) and that there may be a period of time where there may be an elevated level of fine fuels in the short term (typically ranging from 3 to 12 months) between small tree thinning and fuel treatments where fuels are allowed to cure in order for maximum potential consumption (FEIS at 115-116). During this short period of time, potentially increased fuel loading may result in an increased fuel hazard. Following slash treatment, the hazard would be decreased.

The FEIS discloses that thinning, mowing, and underburning are expected to reduce fire behavior (FEIS pages 104-111 &114-120) and slash will be treated as necessary. Certain precautions are taken when there is a fire occurrence concern during operations, such as fire watches, on-site suppression equipment, and operation shutdowns. Closing the primary access road (4245) into the Experimental Forest with a gate is likely to reduce the risk of human-caused fire occurrence in the area.

The FEIS discloses the effects of slash disposal and fuel reduction treatments to the soil resource (FEIS at 213-214, 219-220). Burning large concentrations of machine-piled logging slash on landing decks and/or main skid trails would cause severely burned soil because heat is concentrated in a localized area. However, this would not result in a net increase in detrimental soil conditions because burning would occur on previously disturbed sites. Therefore, there would be no cumulative increase from the predicted amount of detrimentally disturbed soil following the mechanical harvest and yarding activities (FEIS, Tables 79 and 81).

Appellants Statement #12: Appellants state that the EIS fails to meaningfully incorporate utilizing scientifically recommended strategically placed land area treatments – SPLATS (or

SPOTS, etc.) and that by failing to analyze an alternative that does not commercially log, an informed decision cannot be made. OSC at 89.

Response: I find that the use of SPOTs (Treatment Optimization) is discussed in the FEIS at 37.

Strategically-placed fuels reduction units would serve to provide limited protection to portions of the experimental forest that fall outside the study area and would not address issues of bark beetle-caused mortality. However, the purpose of the EXF project is to reduce competition within the Experimental Forest across large areas. There are limitations to the concept of SPOTS, particularly as it relates to smaller pieces of the overall landscape. It is more appropriate when attempting to limit large fire growth and in areas where treatment opportunities are limited to a relatively low percent of the landscape.

I also find that a no timber harvest alternative was considered but not analyzed in detail because it would not meet the purpose and need for action which is to reduce stand density to maintain high growth rates and reduce susceptibility to catastrophic loss to insects, disease, or fire, and to implement the research study plan (FEIS at 38).

Appellants Statement #13: Appellants state that the EIS does not present any legitimate proof that mixed-conifer forests are at historically uncharacteristic levels with their fuel load, and does not disclose acres and occurrences of all past fires or fire intensity patterns. OSC at 6 and 93.

Response: I find that the FEIS does demonstrate that high fuel loads exist in the planning area.

The FEIS discloses that the Experimental Forest has been the subject of extensive study since 1937. The Forest Service believes the charred stumps the respondents have seen in the project area are the remnants of the stand replacement fire that led to establishment of the single-cohort stand that exists today. The FEIS discusses fire return information for the plant associations present on Lookout Mt. (pp. 103-105). In addition, the FEIS documents that portions of Lookout Mountain were underburned in past research efforts (see Table 11 in the FEIS and Appendix B). The historic fire information (since records were kept) in the project area is based on Forest Service records that date to about 1904, and show that one large fire has occurred inside the project area in the last century (FEIS at 4, 44, 62, and 84).

The FEIS discloses that the low-severity fires that typify Fire Regime I happen most frequently (0-35 years; see Appendix, Section 1 of Fire Fuels Report). Many scientists cite similar frequent fire frequencies for Fire Regime I landscapes (Weaver, 1951, Dieterich, 1980, Savage & Swetnam, 1990, Weaver, 1959, Soeriaatmadja, 1966, Morrow, 1985). This short interval fire cycle would indicate that most of the Fire Regime I area would have burned more than three times without human influence and intervention since the early 1900s. An analysis of the historical large fire record that dates back to about 1904 for the Deschutes National Forest indicates that about 17% (5851 acres) of the area classified as Fire Regime I within the two watersheds has burned since records were kept. This would indicate that more than three quarters of the area has missed three or more entries of fire over the course of the last century. With regards to the 17% of Fire Regime I area that has burned, it has only burned once and is therefore either currently missing an interval (or more) of fire, thus justifying the need for action (FEIS at 4, 44, 62, and 84).

Study Design/Research/Best Available Science:

Appellants Statement #14: Appellants state that the study design is flawed because some parameters are not susceptible to statistically powerful results, such as "the effect of climate change interacting with a set of fuel treatments." Appellants assert that climate is too variable and this set of treatments too small to draw any useful findings for this study, and that there are just too many variables. OW at 3.

Response: I find, based on the rigorous review to which the Study Plan was submitted, that it is sufficient to test the hypotheses therein.

Climate change is one of six working hypotheses in the study plan (FEIS Appendix B pages 22-25). Statistical tools chosen to compare community composition within and among treatments are "well suited to non-normal ecological data because it avoids the assumptions of linear relationship among variables and is robust with respect to large numbers of zero values." This Study Plan was internally reviewed by a team of scientists and externally reviewed by a range of scientists and a member of the environmental community in a double blind review (FEIS Appendix B page 2). All comments were reconciled and documented in the FEIS Appendix B, pages 42-56.

Appellants Statement #15: Appellants state that the ROD's claims that the research conducted with this project will be applicable to 200,000+ acres of blackbark pine on the Deschutes NF is doubtful because these mature forests may not respond in the same way to management as the young blackbark stands. Appellants also state that the FS should have considered research that would be much more applicable to the blackbark stands, such as treatments in actual blackbark stands. Appellants state that most of the blackbark stands are east of the owl range and would therefore be subject to the 21" dbh limits of the Eastside Screens, but because this project will not be subject to the Eastside Screens, the results will be of little value to managers who must work within those limitations. OW at 3 and 4; OSC at 18.

Response: I find that the appellant misstated the ROD. The actual statement in the ROD is: "For example, results of this research will provide mangers with scientifically sound data showing the effects of a range of tree densities on growth rates, mortality, and windthrow or how to restructure single-cohort stands to multi-cohort stands – information that can be directly applied to all or a portion of the 200,000 + acres of blackbark ponderosa pine stands on the Deschutes National Forest."

I find the appellant's statement incorrect because the study results will be made available to a variety of land owners and managers. Because not all trees larger than 21 inches dbh would be removed from a stand, the information will still be applicable to areas under the Eastside Screening direction.

The selected alternative and associated planned research is consistent with priorities set out in the LRMP (FEIS Appendix C) and with the definition of Experimental Forest (FEIS page 2) and the PNW Managing Disturbance Regimes Research, Development, and Application Program (MDR).

The study plan is tied to the PNW Managing Disturbance Regimes Research, Development, and Application Program (MDR) (FEIS Appendix B page 3, FEIS page 5). As stated in the FEIS (page 5): "The proposed action will also further the mission of the MDR Program which is: *to provide new insights and scientific knowledge about the role of natural and human-caused disturbances as agents of change in ecosystems, and the degree to which they can be effectively*

managed to achieve or sustain desired ecologic conditions, functions, and socioeconomic values of forest and rangeland ecosystems."

The research results obtained by implementation of the selected alternative will be useful to managers on and off NFS lands. The study plan states (FEIS Appendix B, page 27) "The ultimate application of information generated by this work will be incorporated in planning, evaluation, monitoring, and management tools used by federal agencies and private land owners."

Appellants Statement #16: Appellants state that while natural mortality processes are of great interest scientifically and much remains unknown, this research project treats nearly every acre of the experimental forest, thus severely limiting options for future scientific study of natural mortality processes in unlogged forests and precluding other research opportunities. OW at 4; OSC at 10, 11, 19, 22, 23, 25, 26, 28, 33, 36, 37, 44, 46 and 91.

Response: I find that the selected alternative is consistent with priorities set out in the LRMP (FEIS Appendix C) and with the definition of Experimental Forest (FEIS page 2). I find that the selected alternative and study plan may preclude some types of research, but will provide a platform on which other types of research are still possible.

The study plan (FEIS Appendix B, page 19) states that "Nothing in this study plan precludes future, higher priority research from occurring within the Lookout Mountain Unit of Pringle Falls Experimental Forest" and the FEIS Appendix B, page 16 states that the "Status of the control units will be assessed after collection of 5th-year post treatment data; nothing in this study plan precludes assignment of other treatments after this period."

Appellants Statement #17: Appellants state that converting single-storied mature ponderosa pine stands into multi-storied stands is contrary to current ecological priorities, given that single-story mature pine forests are far below the historic range of variability, and multi-storied stands are often over-represented across the landscape due to fire exclusions. Appellants state that because this project is moving an under-represented stand type toward an over-represented stand type, it is in violation of common sense. OW at 4.

Response: I find the project analysis sufficiently supports the forest plan amendment to harvest in Late Old Structure (LOS) forests (FEIS at 247-250).

The study design randomly assigned treatment types to the project area; avoiding all stands with LOS characteristics would have interfered with the ability to answer research questions. FEIS at 248. Table 88 of the FEIS documents that 10 acres of ponderosa pine late multi-strata would meet single strata criteria after treatment, resulting in a net loss of 1 acre of ponderosa pine dry LOS in the watershed; this effect was not considered significant. FEIS at 248.

Appellants Statement #18: Appellants assert that the FEIS (pp 246-247) presents a flawed summary of the study Mitchell, Harmon, O'Connell (2009), giving a misleading impression that the only question is whether the fuel treatments will reduce the potential for severe fire, while excluding the question of whether fire is likely to occur in the first place. Appellants also assert that the FEIS' citation of Hurteau et al (2008) to support its assertions that logging will help reduce carbon emissions is also flawed. OW at 5.

Response: I find that the FEIS reasonably assumes that fire is likely to occur in the planning area without quantifying the parameter.

The FEIS page 109 states assumptions made for the analysis of fire behavior. Included in this are the assumptions that lightning will remain a source of potential ignitions and that wildland fire will not be eradicated in these ecosystems. Additionally, the FEIS demonstrates that about 76 percent of the planning area supports a plant association group in fire regime I, a pre-EuroAmerican Settlement fire recurrence of between 0 and 35 years (FEIS pages 100-101). Additional review of Mitchell et al. 2009 is located in the FEIS Appendix F, page 73.

Appellants Statement #19: Appellants state that the project's plans to sacrifice the rare ecological integrity of the project area violate the legal requirements of the NEPA that projects be based upon objective expert analysis, sound science, accurate site-specific conditions, and comprehensive assessment of the project's direct and cumulative impacts and irretrievable commitment of resources. OSC at 2.

Response: I find that the FEIS is consistent with the CFR regulations concerning methodology, scientific accuracy and interdisciplinary preparation and therefore does not violate NEPA.

40 CFR 1502.24 states that "Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in environmental impact statements. They shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions in the statement". As stated on page 5 of the FEIS: "The research to be conducted was the basis for the Study Plan; the final approved Study Plan is the origin of the proposed action." Documentation of methodology for the study design is found in the FEIS in Appendix B at pages: 26 and 27. A double blind review of the Study Plan and its methodology can be found on pages 39 to 56 also in Appendix B. Additional methodologies used in the FEIS are described on pages 49, 51, 103, 111, 112, 203, 204, and 227.

"Environmental impact statements shall be prepared using an inter-disciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts (section 102(2)(A) of the Act). The disciplines of the preparers shall be appropriate to the scope and issues identified in the scoping process (§1501.7)" (40 CFR §1502.6 Interdisciplinary preparation). The list of preparers and their qualifications can be found on page 257 of the FEIS.

Appellants Statement #20: Appellants state that the FEISs proposed alternatives, including the ROD's selected action alternative, significantly diverge from scientifically credible research and appropriate management methods for this rare ecologically functioning ponderosa pine-mixed conifer old growth and spotted owl LSR forest area. Appellants assert that the FEIS does not address scientific controversy or use the best available science on a number of topics, including thinning for fuels reduction, ecosystem resilience, climate change, LOS habitat, use of HRV, and that planned actions fail to adequately disclose and address the rarity of the project area's relatively intact old growth forest ecosystem. OSC at 9, 10, 11, 12, 13, 14, 33, 37, 38, 39, 40, 41, 45, 47, 49, 53, 54, 59, 60, 62, 63, 65, 67, 68, 90, 91, 92, 93, 99, 100, and 120.

Response: I find that the FEIS selected alternative and the Study Plan are scientifically credible and that the FEIS discloses changes to old growth at an appropriate scale.

As stated on page 5 of the FEIS, "The research to be conducted was the basis for the Study Plan; the final approved Study Plan is the origin of the proposed action." This Study Plan was internally reviewed by a team of scientists and externally reviewed by a range of scientists and a member of the environmental community in a double blind review (FEIS Appendix B page 2). All comments were reconciled and documented in the FEIS Appendix B, pages 42-56.

Discussions of the change in LOS due to the proposed actions (including the selected alternative) are found on page 248 of the FEIS, table 88. Table 88 shows a total loss of 7 acres of LOS forest across the watershed. Effects to the Late Successional Reserve (LSR) are on pages 56 to 59 of the FEIS. Changes to the LSR are analyzed relative to the entire Sheridan Mountain LSR.

Appellants Statement #21: Appellants assert that the project's planned logging far exceeds scientifically reasonable actions capable of achieving the project's purported fire and insect risk reduction ecological purpose and need goals and that there is insufficient and highly controversial scientific support to show that commercial thinning reduces fire risk. OSC at 10, 41 and 63.

Response: I find that selected alternative meets the purpose and need for the project, and that comments from scientists and members of the public were considered in the FEIS.

The purpose and need for the project meets the requirements of CEQ regulations 40 CFR 1502.13 and is described on pages 4 and 5 of the FEIS. Two purpose and need statements are made: 1) reduce the risk of a severe insect epidemic or catastrophic fire, and 2) to provide operational scale research opportunities. The second purpose presumably includes the treatments considered by the appellant to "far exceed scientifically reasonable actions capable of achieving the project's purported fire and insect risk reduction ecological purpose and need goals." The rationale for the decision are found in the ROD pages 3 to 8.

Consideration of all comments on the FEIS can be found in Appendix F. As stated on page 5 of the FEIS, "The research to be conducted was the basis for the Study Plan; the final approved Study Plan is the origin of the proposed action." This Study Plan was internally reviewed by a team of scientists and externally reviewed by a range of scientists and a member of the environmental community in a double blind review (FEIS Appendix B page 2). All comments to the study plan were reconciled and documented in the FEIS Appendix B, pages 42-56.

Appellants Statement #22: Appellants state that the FEIS alludes to additional RNAs, that the possibility that these future areas may provide for research opportunities that can equate with and replace EXF is not supported in the FEIS. OSC at 18 and 19.

Response: I find that the allusion the appellant states is in the FEIS (though does not give the actual quote) is a misinterpretation of the FEIS.

The FEIS made the point that most areas of the forest, including the "controls" and the most protected areas, like RNAs, were managed at one time. The FEIS reads as follows (Appendix F page 40):

> "Response: The reason for the size of the control areas is discussed in the FEIS Appendix B p. 16. The potential for future research is maintained by treating large blocks and reducing the risk of large-scale disturbance. The potential for future research to occur within control units is not foregone with this project; however, the control units are not entirely "unmanaged" as are most Research Natural Areas."

Appellants Statement #23: Appellants state that whether or not the planned manipulations would really reduce stand replacement fire or prevent further pine bark beetle infestation is itself subject to scientific controversy, and whether the existing condition indicates the "imminent risk" of "catastrophic" (stand-replacement) fire or pine bark beetle "attack" is highly debatable, lacks specific data, and does not represent a scientific consensus. OSC at 22 and 24.

Response: I find that the FEIS and ROD disclose the risk of beetle mortality and catastrophic fire and that the FEIS adequately addresses scientific controversy.

The ROD discloses that the trees within the project area have declined in radial growth over the past decade, and have structural characteristics that indicate that they are at imminent risk of catastrophic loss to bark beetles and high risk of loss to wildfire. ROD at 1. The Silvicuture report at 21-22 documents tree radial growth rates that show the susceptibility of the trees to bark beetle attack. The determination of "imminent risk to catastrophic loss of overstory to bark beetles" was made prior to the EXF decision by the Stations Director's signing the Study Plan on March 3, 2009.

For the Study Plan and proposed actions to be consistent with Management Area 16 standards and guidelines (Experimental Forest), the Director of PNW Research Station must determine the project area is at "imminent risk to catastrophic loss of overstory to bark beetles" (FEIS Appendix C page 1). This determination was based on the "definition in stocking levels for the Deschutes National Forest based on the Stand Density Index, and refers to loss of the overstory to bark beetles" (FEIS Appendix C page 1, and FEIS page 4). The Study Plan (FEIS Appendix B pages 4-7) describes the existing conditions in terms of SDI and growth rates. This is referred to as being the basis on which the Station Director made the "imminent risk to catastrophic loss of overstory to bark beetles" determination (FEIS Appendix C page 1). The determination is made by the Station Director's signature of the Study Plan.

The FEIS Appendix F documents and addresses scientific controversy and use of the best available science, regarding this project.

Appellants Statement #24: Appellants state that there is no "need" to address the risk of insect epidemic or fire when the area is supposed to be a natural forest research area undergoing natural conditions so as for scientific experiments to be replicable for other natural forest settings. OSC at 23 and 69.

Response: I find that the appellants misstate the intent of the experimental forest and that the selected alternative and associated study plan are appropriate under direction of the LRMP and the definition of experimental forest.

The McSweeney-McNary Act of 1928 implemented by Regulation L-20 in 1930, directed the Chief of the Forest Service to define experimental forests as dedicated to and used for research, and to make them permanently available. Station Directors are the line officers responsible to the Chief for assigned research activities, including research and management of experimental forests (FSM 1236.21). Within PNW Station, individual experimental forests and ranges are recognized as components of a national network, with administration assigned to Research Programs. The MDR Program has responsibility for Pringle Falls Experimental Forest. This responsibility includes protecting and ensuring a wide array of future research opportunities. Pringle Falls Experimental Forest was established as a center for research in ponderosa pine forests east of the Oregon Cascade Range (FEIS Appendix B, page 11).

For Management Area 16: "General Theme and Objective: The Pringle Falls Experimental Forest is within the Forest boundary and is administered by the Pacific Northwest Research Station. The Experimental Forest serves as a field laboratory for research. Experiments are conducted to evaluate the effects of silvicultural practices on growth and yield of ponderosa and lodgepole pine. The effects of harvesting on soil moisture and other resources are also being

evaluated. The role of fire in natural ecosystems is being investigated. (LRMP 4-152)" (FEIS Appendix C, page 1).

Appellants Statement #25: Appellants state that the research and development authority of the Forest and Rangeland Renewable Resources Research Act of 1978 does not have an exclusive mission of only allowing for this particular study plan and should not be read to mean that any study plan is automatically appropriate or approved, especially if it precludes or interferes with other valid research. OSC at 25.

Response: I agree with the appellants that the "authority of the Forest and Rangeland Renewable Resource Research Act of 1978 does not have an exclusive mission of only allowing for this particular study plan."

Approval of the Study Plan was given only after it was internally reviewed by a team of scientists and externally reviewed by a range of scientists and a member of the environmental community in a double blind review (FEIS Appendix B page 2). All comments were reconciled and documented in the FEIS Appendix B, pages 42-56.

Appellants Statement #26: Appellants state that despite their comments on the DEIS regarding the significant scientific controversy around the EXF proposed action, the FEIS and ROD fail to adequately disclose the scope and depth of this controversy or to amend the proposal to address scientists' concerns, instead relegating opposing scientists' views to an appendix, with no names given and no credentials attached. Appellants state that the ROD fails to acknowledge or address the scientific controversy over the proposed action. OSC at 29 and 33.

Response: I find that the appellants' point is a misunderstanding of what a double blind review means and what it accomplishes.

In a double-blind review neither the submitting scientist(s), nor the reviewer(s) know each other. This ensures that there is no bias in the review and response due to familiarity between parties and enables the most rigorous of dialogue to occur without fear of reprisal. Subsequent release of the names of reviewers would violate the protection granted to the reviewers under this system.

In addition, Appendix F of the FEIS addresses scientific controversy and use of best available science.

Appellants Statement #27: Appellants state that the Forest Service uses models that are not based in best available science, including use of UMZ, SDI, FRCC and the model methodology use in its fire and insect risk modeling. Appellants state that EIS fails to objectively present these formulas as hypothetical works in progress, fails to disclose scientific contention to their findings, and denies the presence of scientific controversy concerning their use and application, especially to the EXF area's rare relatively intact LOS mixed fire forest ecosystems. OSC at 59, 65 and 69.

Response: I find that the Forest Service used appropriate models throughout the FEIS and disclosed scientific controversy throughout the FEIS.

Disclosure regarding use of all of the models is disclosed throughout the FEIS and these same appeal statements were responded to in the FEIS Appendix F at 4, 7, 8, 9, 12, 16, and 21.

Appellants Statement #28: Appellants state that the FEIS inappropriately references some studies, without disclosing that their recommendations do not support the level of extensive old

growth and mature logging planned in EXF, and that such misrepresentation of science violates the NEPA and President Obama's Scientific Integrity directive. OSC at 68.

Response: I find that the FEIS did not inappropriately reference studies.

Of the studies listed by the appellant, only two were actually used as references in the FEIS, Agee 1993 and Brown et. al. 2003. Agee was appropriately used to describe common understandings of fire behavior and fire ecology in the Pacific Northwest. The Brown et. al. 2003 study was appropriately used in referencing optimal levels of coarse woody debris for relevant forest types.

Alternatives:

Appellants Statement #29: Appellants state that the Forest Service failed to consider reasonable alternatives that would have treated much smaller areas immediately around the existing research plots in order to reduce fire hazard. OW at 3.

Response: I find an adequate range of alternatives was developed in the FEIS per 40 CFR 1501.2, including an alternative similar to that noted in the appellants statement.

An alternative was considered that "would have treated much smaller areas immediately around the existing research plots in order to reduce fire hazard." The alternative considered treating the minimum number of acres and locations based on Treatment Optimization Modeling that would protect the existing research plots. This alternative is described on pages 36 and 37 of the FEIS was not analyzed in detail because it did not support the project need for experimentation and the study plan.

Appellants Statement #30: Appellants believe that the FS failed to consider an adequate range of science based alternative research and restoration priorities. Appellants assert that the alternatives were nearly identical, in violation of NEPA. OW at 4; OSC at 10, 11, 29, 33, 34, 37, 41, 44, 46, 91, 95, 96, 979, and 98.

Response: I find an adequate range of alternatives was developed in the FEIS per 40 CFR 1501.2 (FEIS pages 35-37).

The FEIS considers 3 alternatives in detail and 6 alternatives considered, but eliminated from detailed study because they would not meet the purpose and need. These 6 alternatives considered include conducting a different kind of research (natural processes only); conducting thinning and fuels reduction without the research component; conduct the research component elsewhere in the Forest; limit the treatments to what is needed to support existing research only; conducting fuels reduction treatments without thinning; and placing diameter limits on tree removal (FEIS pages 35-37). These alternatives are described on pages 36 and 37 of the FEIS.

Alternative 3 responds to the significant issue of thinning in spotted owl habitat and treats 372 acres less than Alternative 2. Alternative 3 still meets the need for action.

Federal agencies are required to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). The EXF FEIS meets these requirements.

Appellants Statement #31: Appellants assert that the Forest Service has not chosen the environmentally preferable alternative, despite strong public and scientists concern about the outcome and impacts of the proposed action. OSC at 29 and 30.

Response: I find that the Deciding Official chose the environmentally preferable alternative.

40CFR 1505.2 (b) requires that the record of decision "Identify all alternatives considered by the agency in reaching its decision, specifying the alternative or alternatives which were considered to be environmentally preferable." Consideration for, and selection of, what was deemed by the decision maker as the environmentally preferable alternative is found on page 12 of the ROD. It states as follows: "We have determined that the environmentally-preferable alternative is Alternative 2, the proposed action. Alternative 2 treats more area within the Experimental Forest with thinning, mowing, and underburning that will be more fire and insect resilient. Alternative 2 also does the best job of meeting the statutory mission of the Experimental Forest by reducing the risk of losing a large portion of it to fire or insects, and incorporating important research into the design of risk-reduction activities."

Plan Amendments:

Appellants Statement #32: Appellants state that because this project will require plan amendments to allow research on logging methods that violate the Eastside Screens or other LRMP standards is not very useful to managers who need to know how to manage *within* the current legal framework. Appellants assert that the ROD's claim that the amendments are non-significant is disingenuous and misleading, given that Late and Old Structure Forests are outside the historical range of variability. OW at 3; OSC at 29, 30, 34 and 92.

Response: I find that the decision to amend the Eastside Screens does not negate the usefulness of the research to land managers. See also response to Statement #15.

The selected alternative requires 2 forest plan amendments; both were determined to be non-significant (FEIS page 249). The decision will provide for activities that contribute to the achievement of the management prescriptions for the area and allow implementation of the goals and objectives of the Research Station and Experimental Forest (FSM 1926.51). They involve a "minor change in one interim standard that would not alter the multiple-use goals and objectives for long-term land and resource management" (FEIS page 249).

Snags/Down Wood:

Appellants Statement #33: Appellants state that this project will remove large trees when there is a significant shortage of large trees and most mangers and policy-makers are trying to grow more. Appellants state that the FEIS does not specify the number of large trees that would be logged. OW at 4; OSC at 5, 13 and 41.

Response: I find that the FEIS adequately analyzes tree removal by diameter class.

The prescribed thinning is from below, where the largest trees will be maintained within the stand to supply the desired basal area (FEIS page 22). Snags are addressed throughout the wildlife section of Chapter 3 of FEIS (pages 126 – 202). The FEIS discloses that there will be a reduction in the amount and recruitment of snags over the project area because stand health will improve and trees will be less susceptible to mortality; some snag recruitment is still expected as mortality will be reduced but not stopped and because accumulated stresses of suppressed growth, climate,

prescribed fire, and post-fire beetle attacks will continue. Beneficially, however, accelerated tree growth will result in larger diameter snags (> 20" dbh) in the long term (FEIS page 193).

An assessment of the average size of trees within each treatment block is included in the FEIS Table 39 (page 92), which shows the average size of trees across the project area is 18.3" DBH; the average size following treatment in the selected alternative is 24.9" DBH. Large tree retention is further explained and displayed in the FEIS at 93, which specifies the existing average number of trees >21" dbh and the post treatment average number of trees >21" dbh. The proportion of large trees to small trees increases post-treatment (pages 93-94). The mid-seral stages (which are above HRV) will move more quickly to the late-seral stages (FEIS p. 95). Thinning will remove the smallest trees to reduce the loss of the largest trees, and will make the larger trees less susceptible to disturbance (FEIS page 97). Snags are also discussed throughout the Wildlife Report and the Biological Evaluation to document existing habitat conditions and effects of the proposed action alternatives on snags.

Appellants Statement #34: Appellants state that the FEIS analysis of the no action alternative (e.g., p 181) erroneously states that recruitment of large snags will be *delayed* by not logging, and FEIS (p 193) erroneously claims that thinning would be beneficial to recruitment of large snags in the long term by "allow[ing] for accelerated tree growth resulting in larger diameter (20" or more) snags and CWM, as trees grow, die, and fall. Appellants state that this analysis is not corroborated by modeling and that a stand simulation must be completed before proceeding. OW at 7.

Response: I find that the FEIS at 181 does identify that Alternative 1 may delay development of larger snags for use by hairy woodpeckers due to stand stagnation.

The FEIS (page 193) states "Although the recruitment of dead wood habitats would slow, thinning would provide beneficial long-term, indirect effects by promoting faster growth of GTRs, ultimately providing larger diameter snags and CWM when these trees do die. There would still be some recruitment of snags within the project area and Lookout Mt. Unit as a result of beetle activity in the control units and areas within the Lookout Mt. Unit not part of the project area". See also response to Statement #33.

Appellants Statement #35: Appellants state that the FS has not amended its LRMP to adopt new standards based on current science for certain species associated with dead wood in dry forests (including white-headed woodpecker, flammulated owl, black-backed woodpecker, and pygmy nuthatch). Appellants state that the current standards are outdated because they rely on the discredited potential population methodology. Appellants state that if the FS is going to rely on DecAID it needs to adopt some official standards stating so, and needs to disclose and consider the short-comings in the DecAID. OW at 9.

Response: I find that the FEIS (page 187) identifies that the current level of snags is meeting the LRMP direction. It also discusses snag inventory data, DecAID, and tolerance levels, and levels of habitat being provided within the proposed project area (FEIS pages 186 – 189), as required. Since LRMP direction is met, no amendment is needed.

DecAID was not relied upon for determining snag or course woody material standards, but was used to analyze the current and post treatment habitat conditions for the various species at the different tolerance levels (FEIS page 187).

Appellants Statement #36: Appellants state that the mitigation in the FEIS is grossly inadequate to recruit future snags over the long term at a level that would meet the biological needs of species, not to mention all the other functions of dead wood cited in Rose et al (2001). OW at 9.

Response: I find that **t**he project does not propose to remove any snags, except for danger trees (FEIS page 30). The perceived "snag gap" is discussed in the FEIS (page 193), and a discussion of factors considered related to modeling is included. A Resource Protection Measure to retain existing snags (FEIS page 30) was prescribed. A monitoring item is included in the FEIS to test assumptions on snag creation or loss (FEIS page 32). Snags are also discussed throughout the EXF Wildlife Report and the Biological Evaluation to document existing habitat conditions and effects of the alternatives on snags. This information in the project file is consistent with that in the FEIS.

Appellants Statement #37: Appellants state that the FEIS snag analysis disclosed DecAID snag tolerances for small snags (>10" dbh), but not for large snags (>20" dbh) which are more rare and more ecologically valuable, so refusing to disclose these tolerances is a major oversight. Appellants also state that the FEIS does not disclose that the no action alternative is the one that creates these conditions. OW at 9 and 10.

Response: I find that the data from DecAID for larger snags was referenced (FEIS p. 189) as "PPDF_L.inv-19", and is available on the DecAID website. Existing snag survey data is disclosed (FEIS p. 187), and includes information on snags >20" dbh. The FEIS documents that the no action alternative would ensure a steady recruitment of snags and logs. FEIS at 190.

Climate Change/Carbon:

Appellants Statement #38: Appellants state that this project will exacerbate global warming by substantially reducing forest carbon storage through logging and transferring carbon to the atmosphere, effects of which cannot be mitigated for hundreds of years. Appellant states that the ROD incorrectly says that the effects on climate are immeasurable when considered at a global scale, given that the effects of fire and wood products are also very small when compared at a global scale. Appellants also state that while the carbon remains in the atmosphere, the carbon is exacerbating global warning and because of this, the FS should buy carbon credits or otherwise mitigate for all the carbon that is transferred to the atmosphere and the extra warming caused during the entire period that the selected logging alternative will store less carbon in the forest than the no logging alternative. OW at 4 and 5.

Response: I find the Responsible Official's consideration and disclosure of the project's indirect and cumulative effects on global warming to be consistent with current direction. ROD at 9.

Contribution to the global concentration of greenhouse gases that affect climate would be an indirect effect of the project to climate change. However, because the potential CO_2 output from the large majority of Forest Service projects are extremely small in the global atmospheric CO_2 context, it would not be possible to conduct quantitative analysis of actual climate change effects based on individual or even multiple projects. It would not be possible to determine the cumulative impact on global climate from emissions associated with any number of particular Forest Service projects. Such disclosure would not provide practical or meaningful effects analyses for project decisions.

For a site-specific action, significance usually depends on the effects in the local area rather than the world as a whole. Because the context of individual projects and their effects cannot be

meaningfully evaluated globally to inform individual project decisions, it would not be possible and is not expected that climate change effects can be found to be "significant" under NEPA and therefore require EIS preparation. In addition, this project was documented in an EIS. See direction in the Climate Change Considerations in Project Level NEPA Analysis Washington Office memo, dated January 13, 2009 at 4, 5, 6, 7,and 8.

The FEIS at 245 correctly stated that, "the scale of this project would likely be immeasurable when considered at the global scale."

Appellants Statement #39: Appellants assert that the FS failed to disclose carbon emissions under "irretrievable commitment of resources," because the carbon losses are certain, while the recapture of that carbon is very long-term and highly uncertain given the uncertainty of climate change. OW at 4; OSC at 12 and 37.

Response: The irretrievable commitment of resources has been addressed in EXF FEIS at 251. See response to Statement #38 for a response to carbon.

Appellants Statement #40: Appellants assert that the FEIS (p 246) should have determined the effects of this project on greenhouse gases because other forests and BLM districts have made an effort to do so. Appellants assert that the EIS does not fully consider or calculate forest carbon sequestration or carbon loss (direct, indirect or cumulative effects) and does not fully consider climate change. OW at 4 and 5; OSC at 10, 11, 38, 45, 48, 72, 73, 74, 75, 77, 78, 88, 89, and 93.

Response: I find that the ROD and FEIS considered the effect of climate change on the project and documented that the impacts on climate change from this project would not be possible to calculate. FEIS at 245, ROD at 10. I find the Responsible Official considered the effects of climate change on the project as a research question in the Study Plan which provides "a unique opportunity to explore vegetation dynamics under a changing climate. ROD at 9; FEIS at 244, and FEIS Appendix B at 14, 22-25.

Direction in the Climate Change Considerations in Project Level NEPA Analysis Washington Office memo, dated January 13, 2009 provides that it is not necessary to calculate green house gas emissions for most projects; however, in situations where the responsible official finds the information useful for decision making, such data and conclusions developed through quantitative analysis would be helpful in comparing alternatives or address any regulatory requirements related to direct effects on greenhouse gas emissions and the carbon cycle. See Direction memo at 5. The FEIS states that, "a qualitative analysis and comparison between alternatives of trade-offs between the amount of carbon stored or greenhouse gases emitted is not possible at the current scale" and that, until the agency adopts meaningful thresholds, "it will not be possible to determine a specific project's effects on greenhouse gas emissions or climate change." FEIS at 245.

Climate change trends and effects are addressed. FEIS Appendix B at 6-7, 43; FEIS at 244. Efforts to identify specific changes as a result of climate change will require long-term monitoring of permanent plots.

Wildlife:

Appellants Statement #41: Appellants state that the FEIS failed to consider the adverse impacts on wildlife habitat (such as the long-term large snags and white-headed woodpecker) against the actual alleged benefits of fire risk reduction (which must be discounted by the relative probability

of fire occurrence during the short period that fuel reduction is likely to be effective, and as adjusted by the increase in fire hazard caused by canopy removal and future growth of ladder fuels). OW at 6 and 10.

Response: I find that the effects on long-term large snags are disclosed in the FEIS at73 in a discussion regarding the LSR. Effects to white-headed woodpeckers are also discussed in the FEIS (pages 140 - 142). Fuel reduction is likely to be effective for at least 15 years, or perhaps longer depending on location and treatment intensity (Fuels Report page 6).

Appellant Statement #42: Appellants state that the FEIS does not adequately disclose the adverse effect of large scale logging on spotted owl dispersal and foraging. Appellants state that FEIS does not adequately disclose or address the full range of scientific controversy and research recommendations pertinent to owls or their habitat. OW at 7; OSC at 11, 28, 36, 98, and 99.

Response: I find that a sufficient discussion related to northern spotted owls (an issue in the FEIS) is contained in the FEIS (p. 47 – 76). Specifically, the effects discussion of the action alternatives begins on page 65 of the FEIS.

Appellants Statement #43: Appellants state that the FEISs analysis of effects to goshawks and marten does not adequately address the adverse effect of loss of dead wood habitat structure which will reduce goshawk foraging opportunities in logged areas or displace goshawk. Appellants assert that goshawk impacts violate NFMA. Appellants assert the FEIS does not adequately disclose goshawk research or scientific controversy. OW at 10; OSC at 11, 106, 107, 108, 109, 110, and 112.

Response: I find that the FEIS adequately discloses the impacts to goshawk and goshawk habitat.

The FEIS lists small mammals as prey species that may be dependent upon down wood as a component of their habitat. In addition, the impacts to coarse woody debris are discussed in the FEIS at 189-191. Effects to foraging habitat are discussed in the FEIS (p. 153). Foraging habitat loss is discussed (FEIS p 153). Figure 29 (FEIS at 153) displays where displace goshawks may move, if impacted.

Resource protection measures to protect goshawk nests are included in the FEIS at 30. I find there is no violation of NFMA or the ESA for goshawk. This species is a Management Indicator Species for the Forest and are addressed as such in the FEIS. The effects analysis (FEIS at 152-154) for goshawk is adequate to determine impacts to the species and their habitat and meets regional requirements for effects disclosure. Effects to marten are disclosed in the FEIS pages 57-160 and are also adequate to determine impacts to the species.

Appellants Statement #44: Appellants state that the FEIS analysis of the effect of logging on pileated woodpeckers (page 184) says that logging may *delay* recruitment of large snags but it fails to disclose that logging will reduce the absolute amount of large snags by a substantial amount and for a long time, which would be revealed by a stand simulation model which the FS failed to prepare. OW at 10.

Response: I find that the FEIS (page184) disclosed that habitat for pileated woodpeckers would be removed through the loss of large trees, and opening of the canopy. Additionally, the effects of hazard tree falling are also considered in the FEIS (page 185). While a model may be requested by the appellants, it is not required and snag estimates in proximity to the proposed

action were included in the FEIS (page 184). In addition, the FEIS contained a full analysis of snags and down wood (pages 186-191).

Appellants Statement #45: Appellants state that the FEISs analysis of effects to pygmy nuthatch, brown creeper, and flammulated owl does not disclose how many acres of habitat might be affected, or to what extent these species would be adversely impacted by reduced recruitment of large snags over time. OW at 10.

Response: I find that the habitat and effects of the action alternatives for pygmy nuthatches are in the FEIS (p. 165 – 167). Habitat and effects of the action alternatives for the brown creeper are in the FEIS (p. 167 – 169 and p. 186). Habitat and effects of the action alternatives for the flammulated owl are included in the FEIS (p. 169 – 171).

Appellants Statement #46: Appellants state that at a time when the spotted owl is facing increasing competition from the barred owl, it is unwise to degrade habitat based on such speculative benefits, and that reducing habitat will just increase adverse competitive interactions and decrease the chances that these two owls can co-exist. OW at 12.

Response: I find that the above statement is the opinion of the appellant. In reference to adverse competitive interactions with barred owls, the FEIS addressed the potential for barred owl competition. The conclusions made in the FEIS (pages 71) and subsequent Biological Opinion received from the US Fish and Wildlife Service (ROD at 12 and 13) do not support the appellants' opinion.

Appellants Statement #47: Appellants state that the effects to fisher were underestimated because the EIS assumes that stands with >55% canopy closure is suitable fisher habitat. In fact, fishers prefer forests with >80% canopy cover, so any thinning that reduces canopy cover below that ideal would be more adverse to fisher than is disclosed in the EIS. Appellants state that the FEIS also fails to adequately account for the adverse effects on fisher foraging opportunities as a result of reduced recruitment of dead wood structure as a result of logging. Appellants assert that the effects to the American marten and their prey species were not adequately disclosed. OW at 15; OSC at 104, 105.

Response: I find that the effects to fisher and marten are adequately discussed in the FEIS.

The FEIS (p. 133 -136) uses 55% canopy closure and above for determination of suitable fisher habitat, based on potential habitat in the project area determined through satellite imagery, which does not break canopy cover down to percentages that exactly match Ruggiero's paper (Ruggiero et. al. 1994 suggest fisher prefer habitats greater than 60% canopy closure). The reference to fishers preferring canopy closure greater than 80% is also provided.

The effects to marten are disclosed in the wildlife section of the FEIS at 157-160.

Appellants Statement #48: Appellants state that the analysis fails to address potential direct and cumulative impacts harms to existing raptor nests of other species in the area. OSC at 108.

Response: I find that direct, indirect, and cumulative effects on raptors and their habitat were displayed and discussed throughout the wildlife section of the FEIS (p. 126 – 202) for those species that were required to be addressed. There are also two resource protection measures (#18 and #19, FEIS page 30) to protect the nests of goshawks and other raptors during the breeding season.

Appellants Statement #49: Appellants state the failure to do monitoring through population studies of Management Indicator Species is a violation of the spirit and intent of the National Forest Management Act and ESA. Appellants state this project will have adverse impacts on a number of terrestrial and avian Management Indicator Species, but the FS lacks monitoring data which would tell them whether the cumulative effects of this project and all other past, present, and future projects might be pushing these indicator species toward some threshold of concern for population viability, in violation of NFMA. Additionally, as the Forest Service is not monitoring MIS populations directly, the FEIS is required to explain in substantive detail the model the Forest Service is using to correlate populations and habitat. Appellants specifically mention the Pacific fisher and Johnson's Hairstreak butterfly. OSC at 27, 28 and 115.

Response: I find that there is a reasoned and logical disclosure of the effects to Management Indicator Species (MIS) and their habitat in the wildlife section of Chapter 3 of the FEIS (pages 126–202).

Surveys and monitoring data that were used to make the determinations was provided. For the particular species mentioned by the appellants, I find that the FEIS at 132 documents that there are no known fishers in the area and documents historical sightings of fisher on the Forest. Fisher are a Federal candidate species for listing under ESA, but as they are not a listed species and consultation is not required. The Johnson's Hairstreak butterfly is a Forest Service Sensitive species; therefore, there is no violation of ESA. Effects to the Johnson's Hairstreak butterfly are disclosed in the FEIS (pages 144 – 145).

Appellants Statement #50: Appellants state that the EIS fails to adequately disclose and address the significant issue of forest connectivity. OSC at 44 and 97.

Response: I find that connectivity is discussed in the FEIS (p. 195 – 200), as it relates to the Eastside Screens and LOS stands.

Appellants Statement #51: Appellants state that USFS should have addressed how further fragmentation of the planning area will affect lynx. Appellants assert the EIS failed to adequately disclose the direct, indirect, and cumulative impacts to lynx prey species (in particular squirrels) and failed to disclose the important role these prey species perform in the forest. Appellants state the Forest has not completed a project specific analysis for lynx and has failed to consult with USFWS. OSC at 101, 102, and 103.

Response: I find that there is no requirement for the Forest to address Lynx. The FEIS Appendix F, Response to Comments at 23, documents that the Forest does not have habitat for lynx based on current habitat definitions.

Appellants Statement #52: Appellants assert that failing to adequately address the likely direct and cumulative impacts to wolverine by the proposed project, given the large home ranges of these animals, and the sightings of wolverines in the region violates both NEPA and NFMA. Appellants state that the EIS fails to disclose any consultation with ODF&W regarding wolverine recovery objectives. OSC at 103 and 104.

Response: I find that the effects to wolverine and their habitat are adequately disclosed in the FEIS (pages 137–139).

Based on the FEIS disclosure, the EXF Biological Evaluation, and the lack of sightings in the project area (FEIS page 138) over the last several decades, the impact determination for wolverine was reasonable.

I also find that the Project Record is complete and contains all required consultation on Federally Listed species, including a Biological Opinion (formal consultation on the impacts of the EXF Thinning, Fuels Reduction and Research Project on the Northern spotted owl (1-7-09-F-01255) dated January 4, 2010). There is no requirement to "consult" with ODF&W.

Appellants Statement #53: Appellants state that the analysis fails to adequately address the project's potential impacts to wolves, including to historic wolf habitat and to wolves which are known to be returning to the Blue Mountains region of Oregon. OSC at 105.

Response: I find that as this is not the Blue Mountain region of Oregon, and a review of the website of Federally listed species does not document wolves as occurring on the Deschutes National Forest (http://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/). Since wolves are not listed as occurring on the Forest, there is no requirement to address them.

Appellants Statement #54: Appellants state that the FEIS violates the NEPA by the lack of meaningful, objective, and accurate analysis, and requisite meaningful scientific disclosures and conclusions regarding eagles. OSC at 106.

Response: I find that bald eagles are addressed in the FEIS at 130, which documents that there is no habitat present in the planning area for bald eagles, and thus, they are not discussed further. Golden eagles are discussed in the FEIS (page 147), and document no habitat for them within or adjacent to proposed treatment areas.

Appellants Statement #55: Appellants state that the EIS for this planned project fails to fully and adequately disclose the current research and current population status and trends of native forest dependent Neotropical migrant and native avian species within the analysis area and adjacent forest. Appellants also state that the impact that abundant and highly competitive bird species would have on sensitive bird species dependent on less fragmented forests should have been adequately disclosed and evaluated in the EIS. OSC at 112 and 113.

Response: I find that the discussion and information related to Neotropical migratory birds and other avian species that are required to be addressed is adequate to make a reasoned and logical conclusion that the effects to those species and their habitat will not be substantial. FEIS pages 126–202.

Appellants Statement #56: Appellants state that the EIS failed to disclose the full conclusions and implications of the Sharp study, in violation of NEPA's requirement for high quality scientific analysis. OSC at 114.

Response: I find that this study was adequately addressed in the Response to Comments - Appendix F (pages 24–25) of the FEIS.

Appellants Statement #57: Appellants state that the analysis fails to indicate substantive ongoing surveys or monitoring data for cavity excavators, and fails to comprehensively include objective science upon which it could reasonably base claims that the planning area watersheds – which have extensive management degradation of once viable habitat - are providing for viable populations of Pileated, Three-toed, White-headed, Black-backed and other woodpeckers,

Williamson's sapsuckers, Pygmy Nuthatch and other cavity excavators, as required by the amended LRMP. Appellants also state that the project fails to address the direct, indirect, and cumulative impacts to these species. OSC at 119.

Response: I find that there is a reasoned and logical disclosure of the effects to those species and their habitat in the wildlife section of Chapter 3 of the FEIS.

Impacts to Management Indicator Species are begins with a listing of MIS species in Table 62, pages 146-149. The status and presence or absence of habitat for those species is also described. If a species has habitat present that may be impacted by the project, it was discussed further in the FEIS.

Specifically, impacts to pileated woodpeckers are documented on pages 174-176 of the FEIS; impacts to three-toed woodpeckers are disclosed on pages 181-182 of the FEIS; impacts to white headed woodpeckers are described on pages 139-142 of the FEIS; impacts to black-backed woodpeckers are found on pages 177-179 of the FEIS, and other species of woodpeckers are also discussed. FEIS at 80-181. Surveys and monitoring data that were used to make the determinations was provided.

General Effects Analysis:

Appellants Statement #58: Appellants state that the EIS should also have given more consideration to the relative benefits of natural disturbance versus logging disturbance. OW at 7; OSC at 99 and 100.

Response: I find that the no action alternative responds to the appellants concerns regarding the benefits of natural disturbance.

40 CFR 1502.14(d) requires the agency to evaluate the alternative of no action. Throughout Chapter 3 of the FEIS, the 'effects' of no action describe how the forest would evolve over time, which describes both the benefits and impacts of natural disturbance.

Appellants Statement #59: Appellants state that the Forest cannot rely on the LSR Assessment unless they subject it to the rigors of NEPA analysis e.g., consider the validity of its assumptions, consider alternatives, and describe environmental consequences, and take public comment. OW at 7.

Response: I find that, a Late Successional Reserve Assessment (LSRA), as required by the NWFP, was completed for the Sheridan Mountain LSR to determine what management activities would be appropriate within the LSR. The LSRA was reviewed by the Regional Ecosystem Office (REO) and determined to be consistent by letter January 27, 1997. The REO found the Sheridan Mountain LSRA provided sufficient framework and context for future activities within the LSR and was consistent with the direction found in the Record of Decision for the NWFP (FEIS pp 58.). NEPA is required when the agency is ready to decide whether it intends to undertake an activity to accomplish a goal (40 CFR 1508.23). LSR Assessments, which did not make project or programmatic decisions, need not be analyzed in accordance with NEPA regulations.

Appellants Statement #60: Appellants state that the proposal to log mature forest that offers suitable habitat for late successional wildlife is based on a stated intent to protect habitat from

fire, but that the efficacy of logging late successional wildlife habitat to save it from fire does not hold up under scrutiny. OW at 11.

Response: I find that the FEIS documents the need to reduce fuels in order to reduce the risk of an insect epidemic or catastrophic fire.

The FEIS documents that fuel treatments can help produce forest structures and fuel characteristics that then reduce the likelihood that wildfire will cause large, rapid changes in or impacts to spotted owl habitat (FEIS at 70). Fuel treatments thus are designed to shift forest stands from having a likelihood of high severity fire to low severity fire. Empirical evidence for this shift are in the literature; see, for example, recent work in northeastern California, similar to Lookout Mountain, where tree survival after wildfire was greatest in those areas that had both thinning and prescribed fire prior to the wildfire event. Survival was near zero for the untreated areas. Survival in thinned-only areas was greater than untreated areas but substantially less than the areas with both treatments (FEIS at 109).

Appellants Statement #61: Appellants assert that the response to public comments in inadequate, in particular by choosing Alternative 2. OW at 15; OSC at 27 and 39.

Response: I find that the FEIS adequately addresses and considers comments in Appendix F.

Appellants Statement #62: Appellants state that the Forest fails to clearly identify the acreage amounts and boundaries of the EXF EIS project analysis assessment area, which continues to remain unclear throughout the FEIS, despite appellants raising this issue in previous comments. OSC at 3.

Response: I find that the FEIS discloses the project boundaries and treatment acres. For example, six different project maps are displayed in the EIS that clearly show the project area (FEIS pages 3, 15, 16, 23, and 26). On page 19 of the EIS, the exact treatment acres are displayed in a table.

Appellants Statement #63: Appellants state that the EIS fails to objectively disclose the actual results and impacts of similarly premised and located logging projects, both within the Deschutes National Forest, and elsewhere in the interior Northwest, and fails to substantiate a legitimate scientific need for a large scale logging project. OSC at 13 and 71.

Response: I find that the FEIS discloses pertinent past projects that relate to the proposed action.

Appendix F, page 17 addressed this comment by the appellants. The effects determinations made by the resource specialists are based, in part, on past experience implementing similar projects. The research component of this project will provide for formal, peer reviewed documentation and analysis of the effects of implementing this project.

The cumulative effects tables in the FEIS pages 41-44 and as described throughout Chapter 3 adequately disclose the pertinent projects and their impacts to the proposed project area. Past and present projects on the Forest and the region not discussed in the FEIS are outside of the scope of impacts or influence to this project area. Please see Forest and Region 6 websites for listings of other similar projects.

Regarding the need for the thinning project and associated activities, there is a need to protect ongoing and future research in the area from disturbances from beetles and wildfires. The largest

threat to current and future research is the threat of losing the existing research sites and future research opportunities to an insect epidemic and/or a wildfire (FEIS at 3-5, 85-87, and 110).

Appellants Statement #64: Appellants assert that there is a lack of full public disclosure, analysis or rationale regarding the 'unwarranted' closure of the 4245 road. OSC at 27.

Response: I find that the FEIS discloses the rationale for closing the 4245 road to help alleviate the high road density in the project area. This will effectively reduce the travel on upwards of 15 miles of road within the project area and provide additional protection measures for deer and elk, as well as other species.

Appellants Statement #65: Appellants state that the FEIS "offers only brief myopic disclosures concerning irretrievable commitments of resources." OSC at 36.

Response: I find that the FEIS, on page 252 discusses the potential for irretrievable commitments of resources, as required by 40 CFR 1502.16.

Appellants Statement #66: Appellants state that the FEIS documentation failed to responsibly address issues of natural quiet, disclose this as a resource worth protecting, and modify alternatives or assess how planned logging and associated actions will affect natural quiet throughout the project area during the extensive duration of the project. OSC at 121.

Response: I find there is no law, regulation or policy that exists that requires the agency to analyze 'natural quiet'.

The Experimental Forest is not managed for wilderness values, but for field research activities (FEIS page 11). There will be noise during operations, particularly from logging machinery and trucks. The impacts will be limited to the project area and haul routes and to the implementation timeframe which is expected to be take from 2 to 5 years. Access to these areas will be restricted during operations.

Appellants Statement #67: Appellants state that the Forest Service, however, has failed to clearly re-evaluate its NFMA conclusions for the EXF project using its 1982 planning rules. OSC at 101.

Response: I find that the Forest made appropriate conclusions based on the NFMA.

The ROD at 14 concludes that the selected alternative is in compliance with NFMA with regards to silvicultural practices and vegetative manipulation/management requirement, language which occurs in both the 2001 rule and 1982 rule.

Silviculture Prescription/Thinning:

Appellants Statement #68: Appellants state that the FEIS and Record of Decision purposefully mislead the public as to the effects and outcome of the large timber sales proposed with verbiage about thinning from below and prioritizing the cutting of small trees. Appellants assert that the insistence on cutting trees with no size limit, requiring a Forest Plan amendment, as well as insistence on the need to commercially log with no size limit in field-verified Northern Spotted owl nesting, roosting, and foraging habitat and in part of a Late Successional Reserve ostensibly set aside to protect Spotted owl habitat is also misleading. OSC at 10, 13, 21and 27.

Response: I find that the FEIS discloses that thinning only the smallest trees would not reduce stand density enough to reduce the risk of insect and disease-caused mortality. The FEIS points out that the average size of trees in the project area is 17.5" DBH, and thinning from below will retain the largest trees on site. FEIS Appendix F at 15.

The FEIS discloses that tree vigor as measured by diameter growth will also improve. Diameter growth will increase within 5 years and the residual trees will continue to grow more rapidly than prior to treatment. Development of small and medium sized trees into larger trees will be accelerated. As a result of thinning from below, the average tree diameter will be larger after treatment to the proposed density levels than before treatment. As a result of accelerated diameter growth, the number of large trees will also increase sooner over time than if treatment is foregone FEIS at 38, 85, 91-93, and 95-96.

As for the appellants reference to thinning and fuels reduction within the Sheridan LSR (FEIS p. 67-68), the FEIS discloses that protection of existing habitat will occur because thinning and fuels reduction will reduce risk of a severe wildfire destroying habitat. Further development of habitat for some of the focal indicator species in the area is expected because tree densities will be reduced while the large ponderosa pine and co-dominant Douglas-fir will be retained and stand health improved.

Treatments are proposed within the Sheridan Mt. LSR as shown in (FEIS Figure 10, page 50). The treated portion of the LSR is part of proposed Unit 33 of the EXF Project. Unit 33 is proposed to be treated with a "moderate thinning" strategy, where the stand will be thinned from below to within 75% of the Upper Management Zone (UMZ) for ponderosa pine. This means that understory and co-dominant trees will be removed from the stand (i.e. unit) resulting in a less dense stand (e.g. a stand density index or SDI that is currently 267 trees per acre will be 152 trees per acre, see Study Plan).

In addition, Alternative 3 was developed to respond to the significant issue of thinning in spotted owl habitat and fully addresses the appellants concerns.

Appellants Statement #69: Appellants state that the proposal also insists on changing the structural composition of existing late and old successional forest despite a deficit on the District of LOS forest and the need for a Forest Plan amendment to further deplete LOS forest. OSC at 21, 22, 29 and 92.

Response: I find that the FEIS discloses that in order to reach the residual target densities, trees over 21 inches would need to be removed across the five units east of the owl line (FEIS at 22). The primary purpose of the proposed project is to reduce risk to the site by reducing stand densities, and lowering susceptibility to catastrophic loss to insects, disease, and fire. By integrating the need to reduce risk to the site with the research goals of the PNW Research Station, treatments would be implemented in such a way that pertinent research questions regarding long-term sustainability of ponderosa pine and mixed conifer forests in a changing climate can be answered. The FEIS at 93 discloses that in order for the proposed study to occur removal of >21" trees are necessary.

Roads:

Appellants Statement #70: Appellants state that the FEIS incorrectly discloses new roads as temporary because the impacts persist for decades to centuries regardless of discontinued use and

obliteration and fails to disclose the impacts of new temporary road construction. OSC at 4, 11, 36, and 63.

Response: I find that the Forest qualifies the effectiveness of subsoiling in restoring hydrologic function as a short-term process (<5 years) by referencing Forest level soils monitoring. While A-horizon storage and pullback may shorten the recovery process, full recovery of soil tilth and productivity are generally accepted to be a more long-term biologic process (> 5 years). The FEIS' reference of Moldenke et al. 2000 (FEIS at 215) does not imply a short term recovery. The impacts of temporary roads are disclosed by resource throughout Chapter 3 of the FEIS.

The FEIS discloses design and removal measures for temporary roads on pages 21 and 29 and these mitigations are adopted in the Record of Decision. It is agency policy to fund the design criteria developed in site specific projects. As for the efficacy of obliterating temporary roads and restoring hydrologic function and soil productivity, the hydrology analysis considers the impacts from roads relating to runoff and the Fall River hydrograph versus impacts to streams, because there are no streams in the project area. Roads were considered when assessing the Equivalent Clearcut Acres (ECA), which was found to be insignificant and not affecting water resources.

Appellants Statement #71: Appellants state that the FEIS did not disclose if closed or seasonally closed roads would be reopened for logging and did not disclose the total miles of haul route over open or seasonally open roads. OSC at 4.

Response: I find that the FEIS at 21 adequately discloses that there will be 35 miles of road maintenance completed for log haul and incorporates the road report for the project area, which documents the status of roads in the project area. The FEIS at 207 and 211 discloses that some currently closed may be re-opened if necessary; this is a speculation by the soil scientist in the interest of full disclosure.

Appellants Statement #72: Appellants state that the miles of road per square mile disclosed in the FEIS failed to account for existent skid trails and unused roads that ecologically continue to function as roads and that the FEIS fails to account for the road density levels in the affected watersheds. OSC at 4.

Response: I find that the FEIS discloses road densities for the resources that could be affected by them in the project area, which is deer summer range habitat. On page 162, the FEIS discusses the target road density, the existing density in the project area applicable to LRMP Standard and Guideline WL-53, and the current open road density of the surrounding watersheds.

Appellants Statement #73: Appellants state that the project failed to sufficiently address removing excessive and resource damaging roads throughout the area, bringing project road density to within scientific recommendations for wildlife and environmental viability, as well as LRMP standards. Appellants state that the project failed to disclose if LRMP road density standards comport with recent scientific recommendations related to wildlife road density thresholds for the area's species of concern, or whether these need adjustment to incorporate relevant new research. OSC at 63 and 64.

Response: I find that the EIS adequately disclosed the existing roads in the project area and their impacts to soils on page 202. Specifically, disturbed areas for roads, landings, and skid trails were considered regarding displacement and compaction, complete with peer reviewed literature referenced.

I find that the current road system is considered as part of the existing condition (see FEIS pages 43, 160-161). The road density for the project area at 2.72 miles per square mile is much closer to LRMP guidelines than the road density for the larger Implementation Unit which averages 4 to 5 miles per square mile. The Deschutes LRMP contains direction that specifies when this situation occurs that the project biologist is to perform a further evaluation (standard and guidelines: TS-13 and 14, WL-53). The analysis on page 164 serves as the further evaluation of road densities. The two action alternatives will close the main route through the Experimental Forest by placing a gate at the 4045/4240 road junction, effectively reducing travel on about 15 miles of road within the project area. The action alternatives do not propose any new permanent roads that would contribute to open road densities, thus complying with Forest Plan Standards and Guidelines.

Cumulative Effects:

Appellants Statement #74: Appellants state that the FEIS does not disclose the total acres of the Lookout Mountain Unit that have already been irretrievably altered by past commercial logging, and are no longer functioning as viable old growth forest habitat. Appellants state that while the FEIS gives the names and dates of various management activities affecting forest structure, it does not consistently give the acreage of these actions, and fails to disclose the total acreage in the project analysis area that no longer functions as old growth and mature (LOS) forest habitat. OSC at 5.

Response: I find that the FEIS does disclose acres harvested by past logging and discloses acreages of habitat types in the planning area.

The Council on Environmental Quality issued an interpretive memorandum on June 24, 2005 regarding analysis of past actions, which states, "agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." The FEIS followed this guidance and disclosed relevant past projects that have shaped the project area.

The FEIS at 195-197 discloses the acres of LOS habitat in the watershed; further, the FEIS section on forested vegetation sets the stage by describing the historic and existing condition of vegetation in the planning area, including a description of LOS. FEIS at 84.

Table 12 of the FEIS (page 45) fully discloses concurrent and future projects that may contribute to cumulative effects. As an example, the Charlie Brown project is listed in Table 12 as an ongoing project. The wildlife section of the FEIS specifically includes disclosure regarding this project in its effects to habitat connectivity. Because the FEIS followed CEQ guidance and disclosed the appropriate level of detail on past logging projects, I find the FEIS did disclose total acres of past logging in the watershed. Based on the information in the FEIS, the FEIS adequately discloses activities contributing to cumulative effects.

Appellants Statement #75: Appellants state that the EIS does not adequately disclose and address the project's direct and cumulative effects at both a localized and a landscape-scale and that the EIS fails to provide a meaningful assessment of the relationship of the "treatments" to accomplish the purpose and need, and the likely impacts of direct and cumulative actions upon the environment. Appellants assert the ROD's claim that there will be no unacceptable cumulative impacts to any resources is unsubstantiated. Appellants assert that the EIS fails to address cumulative effects from past and ongoing projects and OHV use, and from BLM activities outside the Forest boundary. OSC at 10, 12, 30, 32, 33, 70, 71, 89 and 90.

Response: I find that the FEIS adequately discloses the direct, indirect and cumulative effects at the appropriate scales.

The CEQ Regulations at 40 CFR 1502.16 (a) require disclosure of direct effects, while 40 CFR 1508.7 requires the agency to document cumulative impacts of past, present, and future actions regardless of what agency (Federal or non-Federal) or person undertakes other actions.

Chapter 3 in its entirety documents direct, indirect, and cumulative effects at relevant 6th field and 5th field scales. Site specific effects are also documented. The FEIS does disclose how the treatments meet the purpose and need for action, particularly how the need for action is met regarding the research study questions.

The FEIS sufficiently addressed impacts from unintended OHV use. FEIS at 135, 136, 139, 163, 164, 166, 174, 176, and 242. Additionally, the FEIS describes a monitoring component specific to unintended OHV use. Based on the disclosure set forth in the FEIS, I find the analysis adequate.

The FEIS response to comments at Appendix F page 42 shows that that the Forest considered the impacts of the BLM project, by documenting that "Hand-thinning was recently completed by the BLM on about 15 acres adjacent to Fall River in the LaPine State Park. No equipment was used. The piles are currently being burned. This project is outside of the Fall River 6th field watershed, so is not considered in the cumulative effects for most resources." The Forest identified ongoing and future actions conducted and proposed by federal and non-federal agencies in Table 12, FEIS at 44. Chapter 3 of the FEIS documents consideration of impacts from these actions throughout the resource disclosures.

The ROD appropriately concluded that there would be no unacceptable cumulative impact to resources. The requirements for a Record of Decision are described at 40 CFR 1505.2. Throughout the FEIS, each resource describes direct, indirect, and cumulative effects. None of the resource areas determined that cumulative effects would be unacceptable. Therefore, the Responsible Official made an appropriate finding regarding cumulative effects based on the documentation in the FEIS.

Appellants Statement #76: Appellants state that the direct and cumulative harms from the planned logging violate the requirements of NFMA and that the faulty analysis and scientifically insupportable logging alternatives presented in the EIS violate the requirements of the NEPA. OSC at 65 and 66.

Response: I find that the project does not violate the requirements of NFMA and that the alternatives are not in violation of NEPA.

The appellants do not specifically cite which requirements of NFMA are being violated. The appellants state that there would be NFMA violations from harms to wildlife species. Two sections of NFMA address wildlife species; Section 6(g)(3)(A) and (B) pertain to land and resource management planning requirements to develop standards and guidelines that provide for a diversity of plant and animal communities, while Section 6(g)(3)(f)(v) requires that regeneration cuts are carried out consistent with the protection of resources, including wildlife.

Given the disclosure in the FEIS regarding wildlife species and the conclusions in the Record of Decision (ROD at 13 and 14), I find that the project does not violate NFMA.

40 CFR 1502.14 guides the development of alternatives to the proposed action. The proposed action is based on a peer-reviewed study developed by the Pacific Northwest (PNW) Research Station. The study was rigorously reviewed, both internally and externally in a double-blind peer review. The study was then approved by the Station Director. Based on this, I find that the proposed action was scientifically supportable and did not violate NEPA.

Alternative 3 was developed to respond to the significant issue raised during scoping. While it does not fully meet the purpose and need, it does comply with the requirements of 40 CFR 1502.14. Chapter 2 of the FEIS also contains alternatives considered, but eliminated from detailed study (FEIS at 36-38), thus also complying with 40 CFR 1502.14. Based on this, I find that the alternatives considered do not violate NEPA.

Appellants Statement #77: Appellants state that the Forest Service's failure to analyze the cumulative impacts on soils, forested vegetation, fire and fuels, LOS habitat, species of concern including spotted owls, goshawks, and others, and failure to consider the interaction of multiple activities is arbitrary, capricious, and not in accordance with NEPA. OSC at 90.

Response: I find that the responsible official adequately analyzed cumulative impacts and considered the interactions of past, present, and foreseeable actions.

The CEQ Regulations at 40 CFR 1508.7 require the agency to document cumulative impacts of past, present, and future actions regardless of what agency (Federal or non-Federal) or person undertakes other actions.

Chapter 3 of the FEIS contains relevant cumulative effects discussion by resource. FEIS at 223-225 details cumulative effects to soils; FEIS at 98-100 describes cumulative effects to forest vegetation; FEIS at 113, 119, 120, 125, and 126 addresses cumulative effects to fire/fuels; FEIS at 196-199 describes cumulative effects to LOS habitat; FEIS at 152 and 154 describes the cumulative impacts to goshawk; and FEIS at 69 and 70 describes the cumulative effects to spotted owls.

Depending on the resource, specific projects were discussed where relevant. Based on the documentation found in the FEIS, I find that the FEIS adequately addressed cumulative impacts.

Soils:

Appellants Statement #78: Appellants state that the agency should take into account how much the soil declines when trees are harvested, that direct, indirect and cumulative effects to soils and soil organisms were not considered, and that the FEIS did not account for the scientific controversy and research recommendations pertinent to the forest soils community and the role soil organisms play in the ecosystem. OSC at 11, 12, 36, and 75.

Response: I find the Responsible Official considered the direct, indirect, and cumulative effects of the project on soil productivity. ROD at 10.

The FEIS discusses and discloses the direct, indirect, and cumulative effects of management related disturbance, including fuels treatments, to the soil environment. FEIS at 205, 206, 208, 209-213, 216-225. There is clear discussion and disclosure of direct and indirect effects of coarse woody debris and surface organic matter. FEIS at 207, 209, and 222.

The effects of soil mitigation and restoration measures to the soil environment are also disclosed (FEIS at 214-217) as are effects on subsurface microbial organisms and fungi (FEIS at 204, 208, 212, 214-215, 223, 239, and 240). The FEIS concluded that there would be no violations of Regional policy (FSM 2520, R-6 Supplement) or LRMP Soil Standards and Guidelines. FEIS at 214, 224-225.

Appellants Statement #79: Appellants state that the EIS did not recognize the importance of mycorrhizal fungi on forest growth and productivity and wildlife species, and failed to adequately discuss how mycorrhizae will be impacted by the planned logging project and by adjacent projects. OSC at 122.

Response: I find the Responsible Official considered the direct, indirect, and cumulative effects of the project on soil productivity, including mychorrhizae, and that the impacts are within Forest Plan Standards and Guidelines. ROD at 10.

Mycorrhizal fungi are important to soil productivity. Detrimental soil conditions and soil organic matter, ground cover, and large woody material are all important to mycorrizhal fungi and forest soil productivity and managed under Soil Productivity Standards and Guidelines SL-3, SL-4, and SL-5. LRMP at 70. The FEIS discusses and discloses direct, indirect, and cumulative effects of management related disturbance to the soil environment (FEIS at 205, 206, 208, 209-213, and 216-225); coarse woody debris and surface organic matter (FEIS at 207, 209, and 222); and discloses the effects of soil mitigation and restoration measures to the soil environment (FEIS at 214-217). Effects on subsurface microbial organisms and fungi are also addressed. FEIS at 204, 208, 212, 214-215, 223, 239, and 240. The FEIS concluded that there would be no violations of Regional policy (FSM 2520, R-6 Supplement) or LRMP Soil Standards and Guidelines. FEIS at 214, 224-225.

Economics:

Appellants Statement #80: Appellants state that the EIS lacks an objective assessment of relevant economic data to credibly support the claim of jobs created by the project and that the EIS fails to address non-resource extractive economic contributions in the area. Appellants state that the EIS fails to objectively address the short and long term impacts of the current economic downturn on the project's fiscal feasibility, including the lack of a societal need for wood products, the backlog of previous project slash piles across the forests that have not yet been addressed, the diminishing economic viability of the project including its potential biomass provisions, the high potential that project implementation in whole or significant part could be indefinitely prolonged, and the probability that some or many of the project's provisions will not be accomplished due to diminished funds and resources. OSC at 2 and 12.

Response: I find that an economical analysis and expected output of timber and associated income is disclosed in the FEIS (pages 241-242) and that non-resource economic contributions are considered.

The economic analysis is in accordance with the FS manual and handbook guidance to complete a financial analysis for timber sales (FSH 2409.18). The economic analysis documented in the FEIS (page 242-244) identifies financial monetary measures for timber and the financial costs of removing the timber. In completing an economic analysis, the project assessed the economic costs and benefits. Numbers used during the analysis included a benefit/cost ratio, discounted benefits, discounted costs, and present net value.

The Deschutes LRMP (1990) identified wood products manufacturing as one of three most important industries in the local area (FEIS at 243). With a lack of consistent forest supplies, automation, and a changing global economy, the primary lumber industry has taken a downturn resulting in forest workers incomes declining. Although the forest industry has seen a dramatic decrease in employment, it remains an important contributor to the local economies of Central Oregon. The FEIS (page 243) considered other economic values across the Forest, including recreation and wildlife.

The economic analysis documented in the FEIS identifies financial monetary measures for timber and the financial costs of removing the timber. The appellant does not provide substantiating data to support the assertion that the wood products would not be needed by society, nor does the appellant disclose which projects have not treated their slash. The appellant does not list which project provisions may not be accomplished.